



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,115	01/26/2001	Eric Lee	IDT-1641	8988

27158 7590 05/03/2002

BEVER, HOFFMAN & HARMS, LLP
2099 GATEWAY PLACE
SUITE 320
SAN JOSE, CA 95110

EXAMINER

OWENS, DOUGLAS W

ART UNIT PAPER NUMBER

2811

DATE MAILED: 05/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/772,115

Applicant(s)

LEE ET AL.

Examiner

Douglas W Owens

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 8-11, 17-19, 21, 24 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent No. 5,909,617 to Manning et al.

Regarding claims 8, 19 and 21, Manning et al. teaches a semiconductor structure comprising:

a semiconductor substrate;

a conductive element (76) over the substrate;

a dielectric spacer adjacent the sidewall of the conductive element;

a semiconductive region (80) in the upper surfaces of the conductive element, the dielectric spacer and the substrate; and

a continuous silicide strap (114) in the semiconductor region over the conductive element, spacer and substrate.

Manning does not teach a semiconductor structure, wherein the silicide strap is formed by reacting a refractory metal layer with semiconductor material in the conductive element, the dielectric spacer and the semiconductor substrate. This is considered a product-by-process limitation. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the

Art Unit: 2811

product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 9, Manning et al. teaches a semiconductor structure, wherein the conductive element is a gate electrode;

Regarding claim 10, Manning et al. teaches semiconductor structure, wherein a gate dielectric is located between the gate electrode and the substrate;

Regarding claim 11, Manning et al. teaches a semiconductor structure, further comprising a source/drain region in the substrate, wherein the strap electrically contacts the source/drain region.

Regarding claims 17, 18, 24 and 25, Manning et al. teaches a semiconductor structure, wherein the upper surfaces of the conductive element, the sidewall spacer and the substrate comprise an implanted silicon layer (80).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12-16, 20, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manning et al.

Regarding claim 12, Manning et al. does not explicitly teach a gate comprising conductively doped polysilicon. Conductively doped polysilicon is a well-known and commonly used gate electrode material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a known material that is well suited for the intended use as a matter of design choice.

Regarding claim 13, Manning et al. does not explicitly teach a dielectric spacer comprising silicon oxide or silicon nitride. It would have been obvious to one of ordinary skill in the art to select silicon oxide or silicon nitride since they are known materials that are well suited for the intended use.

Regarding claims 14, 20 and 22, Manning et al. does not teach a semiconductor device, wherein the dielectric spacer is silicon-rich. Silicon-rich oxides and nitrides are known and used in the art for several advantages, such as superior etch selectivity as compared to stoichiometric dielectric layers, as well as better protective properties. It would have been a matter of obvious design choice to incorporate a silicon-rich dielectric into the device taught by Manning et al. since the properties described above are desirable.

Regarding claim 15, Manning et al. teaches a semiconductor structure, wherein the silicide strap comprises a refractory metal silicide (Col. 7, line 53). Manning et al. does not explicitly teach a silicide strap comprising cobalt silicide. It would have been obvious to one of ordinary skill in the art to select cobalt for the refractory metal silicide, since cobalt is a refractory metal.

Regarding claims 16 and 23, Manning et al. does not teach reacting the refractory metal with amorphous silicon. It would have been obvious to one of ordinary skill in the art to select amorphous silicon since it is a known material that is well suited for the intended use.

Response to Arguments

5. Applicant's arguments filed February 14, 2002 have been fully considered but they are not persuasive.

6. The applicant argues that Manning et al. does not anticipate the claimed invention because the silicide strap is formed using a different method than that of the claimed invention. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 2811

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

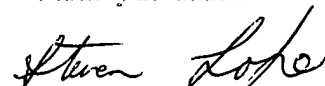
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO
April 26, 2002

Steven Loko
Primary Examiner

A handwritten signature in black ink, appearing to read "Steven Loko", written in a cursive style.